

THE *Soybean Digest*



Official Publication
OF
THE AMERICAN SOYBEAN ASSOCIATION

VOLUME 1 • NUMBER 10



AUGUST

• 1941

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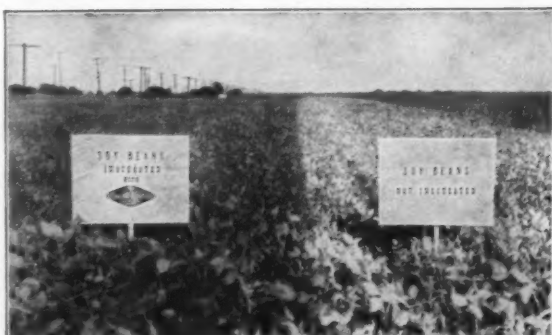
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INOCULATION FOR SOY BEANS



EFFECT OF INOCULATION ON SOY BEANS

Treatment	Yield	Pounds Protein per ton	
	Seed	Seed	Hay
Inoculated	46.6 bu.	705	316.2
Not Inoculated	34.7 bu.	621	292.4
Gain for Inoculation	11.9 bu.	84	23.8

(University of Illinois Bulletin No. 310)

Prepared only by
THE URBANA LABORATORIES
Urbana, Illinois

THE Soybean Digest

Vol. I

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IN THIS ISSUE

PAGE

Market Summary	2
Technological Problems in Processing Soybeans.	
3. Solvents for Soybean Oil Extraction.....	4
Illinois Fairs Feature Soybean Exhibits.....	5
Soy Oil Meal Tops Feeder Tests.....	6
Record Fats and Oils Production Forecast.....	6
Two Full Days Await Soybean Growers and Industrialists at 21st Annual Convention.....	7
Digest to Supply Grading Sieves.....	7
Editorials	8
Soybeans and People.....	10
Hogs Can't Perform Miracles (Soybean Nutritional Research Council Feature).....	16

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BURROS bags, known and used the world over, can help you solve your bag problem, whether you be a soybean processor or a seedsman, and can do it at a price that will save you money. Before you make your next season's contracts, let us quote you prices on reconditioned bags.

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- ✓ 2. FULL COUNT
- ✓ 3. SERVICE
- ✓ 4. COOPERATION
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MARKET SUMMARY

Chicago Futures	SOYBEANS		
	August 15	Week Ago	Month Ago
October	\$1.45 3/4	\$1.46 1/4	\$1.42 1/2
December	1.46 3/4	1.47 3/4	1.43 3/4
May	1.50 1/2	1.51 1/2	

Tanks, midwest mills..	SOYBEAN OIL		
	9 1/2 c (old)	9 3/4 c (old)	10 1/4 c (old)
	9 1/4 c (new)	9 1/4 c (new)	9 3/4 c (new)

Memphis, Tenn., Futures	SOYBEAN OIL MEAL		
October	\$31.00 @	\$30.75 @	\$29.10 @
	31.50	31.00	29.50
December	31.10	30.75 @	29.05 @
		30.90	29.50
March	31.05	30.75 @	
		31.00	

Quietness and firmness were the principal characteristics of the soybean market during the past month, with price rises of about 4c over a month ago normal.

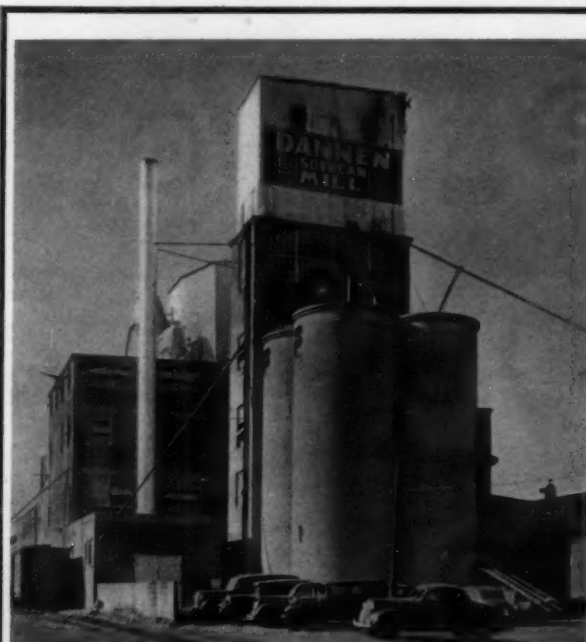
At this writing the cash price for No. 2 Yellow is \$1.55 1/2 at Chicago, with future prices ranging from \$1.44 1/4 to \$1.50 1/2.

Soybean oil prices, which have ranged from 8 3/8c to 10c during the month are holding their own at 9 1/4c to 9 3/4c.

Soybean oilmeal has gained about \$2.00 during the month, with future prices now from \$31.00 to \$31.50.

A record soybean crop of 109 million bushels is forecast in some quarters. The 1941 acreage decline of 6 percent from 1940 is being offset by the prediction that 65 percent of the 1941 crop will be harvested as grain, compared with 45 percent of the 1940 crop.

Advancing consumer purchasing power and defense needs have tended to advance the price, while a brake has been exerted by the stocks of oil reserves lying in South American and Philippine ports, and in sympathy to indications that the Federal government may take price control measures.



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• This modern mill has an annual processing capacity of 1,000,000 bushels, furnishing you a year 'round market for the soybeans you raise—furnishing also a high grade protein feed for your livestock. Use Dannen's Soybean Oil Meal made from the beans you grow.

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INTRODUCING THE BRAND NEW "Six-Footer"!



NEW McCORMICK-DEERING
No. 62 COMBINE

More Beans in the Bag! when You Harvest with a McCormick-Deering

● From field to tank in one operation! And your soybeans harvested clean, with a minimum of cracking or shattering. That's the story when you use a McCormick-Deering Combine.

This fall, the brand-new 6-foot No. 62 and the 4-foot No. 42 are ready to help make short work of the soybean harvest. Built for the average-size farm, the No. 62 has 20 percent more capacity than other 6-foot combines, which makes it right at home on larger acreages. The No. 42 streamlines the harvest on small farms. It is built for power-drive operation behind a tractor like the Farmall-A or Farmall-B.

Ask the nearest International Harvester dealer or Company branch for detailed information about these two combines.

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McCormick-Deering 4-ft. No. 42 — for Clean Work in Soybeans

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The No. 62 and No. 42 Thresh All These Crops—and More—Easily, Efficiently

Alfalfa	Grain Sorghums	Radish
Barley	(feterita, milo,	Rice
Beans (navy, lima,	hegari, kafir,	Rye
kidney, pinto,	sorgo, etc.)	Soybeans
etc.)	Lespedeza	Spelt
Buckwheat	Lettuce	Sudan Grass
Carrots	Millet	Sunflowers
Clovers (all kinds)	Mustard	Turnip
Crotalaria	Oats	Vetch
Emmer	Parsnip	Wheat
Flax	Peas	

Technological Problems In Processing Soybeans

3. Solvents for Soybean Oil Extraction

By W. H. GOSS, Chemical Engineer

U. S. Regional Soybean Industrial Products Laboratory*

AN ideal solvent for extracting oil from soybeans should be capable of penetrating the bean flakes and rapidly dissolving and removing the oil and only the oil. Obviously, it must also be easily removable from the oil and the meal, leaving both products in satisfactory form for consumption. Other factors entering into the choice include cost, ease of recovery, fire and explosion hazard, corrosiveness, toxicity and boiling range.

Apparently, there is only one extraction plant in the world now processing soybeans on a commercial scale with any solvent other than petroleum fractions. The single exception is a Manchurian plant using absolute ethyl alcohol. In this country, most of the solvent consists of hexanes, a typical commercial grade of which has a boiling range of 146° to 158° F. and a specific gravity of 0.685 at 60° F. In Europe, it is the usual practice to employ a hydrocarbon boiling between 160° and 195° F. These petroleum products are excellent fat solvents, and they can be quite readily removed from both the oil and the meal without impairing the qualities of the products. Above all, they are relatively cheap and available in large quantities.

Solvents Flammable

Such solvents are so flammable that their use by any but experienced operators is hazardous, and modern extraction plants are accordingly designed to afford the greatest possible protection from explosions. Buildings should be well ventilated and provided with large areas of windows designed to open or shatter easily in order to relieve pressure in the event of an explosion. The plant should be located at some distance from the power house, and no open lights, flames, etc., should be permitted in the vicinity. Motors and related electrical equipment must be explosion proof, and electric wiring must conform to requirements of the National Electrical Code. Only spark-proof tools should be used in the building, and hobnailed shoes, matches, and similar articles should be forbidden. Floors and stairways should be of the grating type.

* A cooperative organization participated in by the Bureaus of Agricultural Chemistry and Engineering and Plant Industry of the U. S. Department of Agriculture, and the Agricultural Experiment Stations of the North Central States of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Many solvents have been proposed and used experimentally in efforts to reduce the danger of extractor operation. Of these, the chlorinated hydrocarbons have received a great deal of attention. The R. and H. Chemicals Department of the E. I. du Pont de Nemours and Company, Inc., has developed an extraction system particularly suited to trichloroethylene. It consists of an inclined helical conveyor which carries the flaked beans downward against a rising stream of solvent. Its operation is approximately the reverse of that employed in the Ford extractor since, unlike hexane, trichloroethylene is heavier than soybean oil.

Hexane Cheapest

At present, the principal deterrent to general use of trichloroethylene instead of hexane is its comparatively high cost. It should not be overlooked as a possible solvent for soybean oil, however, because it is entirely nonflammable and nonexplosive. Dry cleaning and metal degreasing industries use it extensively for this reason, and it is likewise used in the extraction of caffeine from coffee.

A number of patents have been issued on the use of liquid propane and other low-boiling hydrocarbons as oil solvents. These materials are so volatile that the equipment must be designed for operation under pressure. The solvents which are mentioned in the literature, particularly in patents, comprise a very long list. Besides the patents specifying the more conventional solvents such as benzene, carbon tetrachloride, carbon disulphide, etc., other patents have been granted for the use of materials like furfural and sulphur dioxide as solvents for extracting fats and oils from the raw materials.

The importance of the corrosive properties of any given solvent is difficult to evaluate. Corrosion is a problem in the edible oil industry not primarily from the standpoint of damage to equipment but mainly through the tendency of infinitesimal traces of metallic contaminants to impair the keeping qualities of the finished products. It is well known, for example, that less than one part per million of copper in some edible oils

will markedly decrease their stability as regards taste and suitability. It is of utmost importance, then, that solvents used for soybean extraction be entirely non-corrosive toward the metals with which they come into contact.

It is difficult to predict whether hexane and similar hydrocarbons will continue to be the only solvents used in this country for the extraction of soybean oil. At the present time, the most promising competitors of hexane appear to be ethyl alcohol and trichloroethylene. The properties of these materials are shown in Table I.

HOT ALCOHOL PROCESS

When soybean oil is dissolved in absolute ethyl alcohol at temperatures higher than about 150° F., a homogeneous solution is obtained. Upon cooling, two layers form; the lower one consists chiefly of soybean oil with a small amount of alcohol, and the upper one is mainly alcohol containing a small amount of oil. The relative amounts of the two layers and their compositions depend upon the original solvent-oil ratio, the proof of the alcohol, and the extraction temperature.

This property has been utilized in the so-called "hot alcohol" process by the Manchuria Soybean Industry Company which operates a large extraction plant at Dairen. The installation has a daily capacity of approximately 100 tons of beans which are processed in a battery of rotary extractors. The solvent is 99.8 percent ethyl alcohol which is dehydrated at the plant. The beans are selected, cleaned, and if necessary, warmed slightly before flaking. Since absolute ethyl alcohol is a dehydrating agent and loses its solvent power toward soybean oil in the presence of water, the flaked beans are dried prior to the extraction. They are then charged into the extraction battery and leached with the hot alcohol under pressure.

Oil Separates

The resulting miscella is cooled and pumped into a conical separating tank where oil containing 5 percent alcohol collects in the bottom. It is drawn off, and the solvent is removed in an evaporator. The recovered oil is of semi-refined quality, having a light yellow color and salty taste, and can be used for edible purposes without further refining. The supernatant alcohol in the settling cone is returned to the extraction system; or, when it becomes too contaminated with water or nonoil extractables, it is transferred to a still for recovery of the by-products and subsequent rectification of the alcohol. The byproducts include sugars, saponins, and phosphatides. The residual meal contains 0.5 to 1 percent oil and requires no refining for use in a

TABLE I.—PROPERTIES OF SOME COMMERCIAL-GRADE SOLVENTS

	Formula	Boiling Range, ° F.	Specific Gravity
Normal hexane.....	C ₆ H ₁₄	146-158	0.685/60° F.
Ethyl alcohol.....	C ₂ H ₅ OH	173	1.472-1.476/15°/4° C.
Trichloroethylene.....	C ₂ Cl ₃	187-189	0.7994/15°/4° C.

variety of foodstuffs. It reportedly commands a price 25 percent higher than that of meal produced by other methods. Furthermore, it is said to possess properties which make it especially suited for the production of industrial proteins.

The principal advantage of the alcohol extraction method is the ease of byproduct recovery. However, the American market for the above-named byproducts is not highly developed and there has therefore been little incentive toward the introduction of the process into this country. At present, the general use of any solvent which extracts appreciable quantities of nonoil substances along with the oil faces considerable restriction because of the relatively limited markets for such byproducts. The cost of alcohol relative to that of hydrocarbons, the relatively high latent heat of evaporation of ethyl alcohol, and the high initial cost of the equipment have been additional deterrents to the development of the alcohol extraction process in the United States.

A large amount of experimental work has been done on the use of ethanol-benzene and methanol-benzene mixtures for soybean extraction in cases where phosphatides are to be recovered. During

the late 1920's such mixtures were employed for a while in the huge plant of Hansa-Muhle, A. G., in Hamburg. At about the same time, a small extraction plant in Monticello, Ill., operated with benzene as a solvent.

LIQUID-LIQUID EXTRACTION

Ethyl alcohol is only one of a class of solvents which in certain temperature ranges are only partly miscible with soybean oil. Others include furfural, methyl alcohol, ethyl acetoacetate, acetic acid, etc. The portion of soybean oil which dissolves in these solvents has a slightly higher iodine number than has that portion which remains undissolved. By contacting the oil and solvent in counter-current flow, it is possible to fractionate the soybean oil into two products, one having a high iodine number and the other having a low iodine number. The former is an excellent drying oil, far superior in this respect to the original oil, and the latter fraction is a good edible oil.

This new method of solvent extraction has been studied extensively at the U. S. Regional Soybean Industrial Products Laboratory and shows great promise as a means for diverting a substantial part of our soybean oil out of the crowded

This is the concluding article by Mr. Goss on the problems of processing soybeans. A fourth article in the series will deal with experiments conducted by the chemical engineering department of Iowa State College in the development of a small processing plant using trichloroethylene as a solvent.

edible product fields of consumption into industrial channels. It may, too, aid in averting a possibly serious shortage of drying oils resulting from the temporary cessation of imports of these materials from South America and the Orient.

The process should not be confused with the solvent extraction of oil from the beans. It is an extraction method to which the oil may be subjected as one step in its refining, and the solvents suitable for carrying out the process are generally somewhat different in their properties from the solvents used to extract the oil from the beans. Although liquid-liquid extraction of soybean oil is not yet being carried out commercially, it is reasonable to expect industrial developments along this line in the not too distant future.

Large Soybean Exhibit Assembled in Illinois

ONE of the largest soybean exhibits ever assembled in the Midwest was visited by crowds totaling into the thousands at the Arcola (Illinois) Home Coming July 31, Aug. 1 and 2, and at the Moultrie-Douglas County Fair at Arthur, Ill., Aug. 5 to 9. The exhibit was moved practically in toto from the Arcola Home Coming, where it was assembled under the direction of Thomas Monahan, Jr., general chairman, to the fairgrounds at Arthur where it was in charge of C. C. Turner, president of the Arthur Association of Commerce.

Contributing to the exhibit were the following companies: Allis Chalmers Manufacturing Company, Swift and Company, Nickel Plate Railroad, Baltimore and Ohio Railroad, Pennsylvania Railroad, Illinois Farm Supply Company, Inoculator Division of the Albert Dickinson Company, Armstrong Linoleum, Decatur Herald and Review, The Glidden Company, I. F. Laucks, Inc., Davies Young Soap Company, Urbana Laboratories, Muller Laboratories, Durkee's Oleomargarine, United States Department of Agriculture, Madison Foods, The Pfaffman Company, The Battle Creek Food Company, The Blanton Company, The Soya Company, Oriental Show You Company, Inc., Fearn Soya Foods Company, Archer-Daniels-Midland Company, A. E. Staley Manufacturing Company, United States Regional Soybean Industrial Products Laboratory, Bakelite Corporation, Modern Plastics, E. I. du Pont de Nemours and Company, John T. Smith and Sons, *The Soybean Digest* and others.

An exhibit of the Ford Motor Company became lost in transit and did not arrive in time for the Arcola Home Coming but was shown at the fair in Arthur.

Illinois Fairs Feature Soybean Exhibit



Upper left: Thomas Monahan, Jr., general chairman of the Arcola (Illinois) Home Coming, like many of the visitors at the soybean exhibit, paused before the sign at the front of the display to handle the soybeans in the box beneath the sign. The exhibit was assembled at Arcola, and shown throughout the Home Coming celebration July 31, Aug. 1 and 2, then moved to Arthur, Ill., for the Moultrie-Douglas County Fair Aug. 5-9. Lower left: The *Soybean Digest* booth in the exhibit. Upper right: A view of one side of the exhibit. Lower right: The front entrance as it appeared at night in Arcola. A long time exposure prevented passing visitors from appearing in the photo. (Photos by *The Soybean Digest*).

Soy Oil Meal Tops Feeder Tests

THE twenty-second annual Iowa cattle feeders' "Hey Day," held at Ames July 25, also turned out to be a banner day for the soybean industry.

Distributed to the feeders present were results of a protein supplement test on feeder cattle conducted by the Iowa Agricultural Experiment Station, showing that soybean oil meal enables the feeder to prepare his cattle for market for less dollars and cents than either linseed or cottonseed oil meals.

In six tests conducted over a 240-day period one lot of cattle fed soybean oil meal supplement registered \$9.57 per hundred pounds as cost of production, while cattle receiving soybean oil meal supplement in another pen cost \$9.77 per hundred pounds.

Two pens of steers receiving linseed oil meal supplement cost \$9.81 and \$9.83 a hundred respectively to prepare for market. When cottonseed supplement was used, the average cost was \$9.84 per hundred. A pen fed a combination of soybean and linseed supplement cost \$9.69 to put on the market.

General Ration

The general ration included corn silage hand-full-fed twice daily for the first 150 days with none fed the last 90 days; shelled corn as follows: 1 pound per steer daily for first 10 days; 1.75 pounds per steer daily, next 220 days; and 1.25 pounds per steer, last 10 days; plus alfalfa hay hand-fed p.m. feed for first 150 days and hand-fed limited twice daily after that time, limited to the amount eaten by the group consuming the lowest amount of hay; plus $\frac{1}{4}$ pound of oat straw per steer daily a.m. feed for last 45 days; plus Mineral Mixture "A" hand-fed a.m. feed over the silage or shelled corn at the rate of 1 ounce per steer daily; plus block salt self-fed.

The corn was hand-full-fed twice daily. Shelled Iowa 939 was fed to all groups.

Mineral mixture "A" has the following composition: ground, raw limestone, 60 pounds; special bone meal, 37.94 pounds; iron oxide, 2 pounds; copper sulfate, 0.02 pounds; potassium iodide, 0.04 pounds; total, 100 pounds.

Protein Supplements

The protein supplements in the different lots were fed in amounts to furnish approximately the same amounts of crude protein. The supplements and amounts daily per steer were as follows:

Linseed meal, solvent process, 1 pound per steer daily first 10 days, 1.74 pounds next 220 days, and 1.24 pounds last 10 days.

Cottonseed meal, 1 pound per steer daily first 10 days, 1.6 pounds next 220 days and 1.18 pounds, last 10 days.

Soybean oilmeals, expeller process. A blend of five soybean oilmeals at the rate of 1 pound per steer daily first 10 days, 1.55 pounds next 220 days and 1.06 last 10 days.

PROTEIN SUPPLEMENTS FOR FATTENING CATTLE

Results of 1941 Experiment of the Iowa Agricultural Experiment Station

Linseed Expeller	Linseed Solvent	Cottonseed	Soybean Expeller	Soybean Solvent	Soybean-Linseed
Necessary selling price cattle, Ames, per 100 pounds to break even.					
Excluding hogs:					
\$10.04	\$10.03	\$10.01	\$9.97	\$9.73	\$9.83
Crediting feed saved by hogs:					
\$9.81	\$9.83	\$9.84	\$9.77	\$9.57	\$9.69
Net cost feed, 100 pounds gain on cattle:					
Credited feed saved by hogs					
\$9.08	\$9.09	\$9.06	\$8.86	\$8.40	\$8.75

Soybean oilmeal, new process, 1 pound per steer daily first 10 days, 1.41 pounds next 220 days and 1.01 pounds last 10 days.

Linseed (expeller) — Soybean oilmeal (new process) 50-50 blend, 1 pound per steer daily first 10 days, 1.56 pounds next 220 days and 1.11 pounds last 10 days.

In conducting the experiment, all conditions were kept as uniform as possible. Hogs followed the cattle, and the saving was credited to production costs. The steers ran on blue-grass pasture during the day, with the exception of 8 days, when a part of the steers were kept in the dry lot extra hours for judging work.

An arbitrary \$1 per hundred was charged for marketing. This included 10 days feeding costs prior to shipment, and all costs in transit and at the Chicago stockyards.

The selling cost represents the price needed to break even. The judgment of the man who raises his own soybeans, has them processed, and feeds the soybean oil meal as supplement to his own feeder cattle, was definitely vindicated.

—hd—

Record Fats and Oils Production Forecast

DOMESTIC production of fats and oils slightly above the record output of 1940 is forecast by The Fats and Oils Situation, United States Department of Agriculture publication.

Coupled with this is the present indication that the wartime dislocation of shipping will not result in the non-shipment of so much South American and Philippine oil as was considered likely until recently.

Domestic production of the major vegetable oils showed large gains over 1940 in the quarter ending June 30, 1941. Soybean production was up to 267 million pounds for the quarter, compared with 220 million pounds for the quarter ending June 30, 1940.

Cottonseed oil production was 515 million pounds for the quarter ending June 30, 1941, as compared with 345 million pounds for the quarter ending June 30, 1940.

Demand has gained strength steadily this year due to consumer purchasing power resulting from the largest national

income in history, and to the defense program.

Shortening production totaled 410,382,000 pounds for the second quarter of 1941, compared with 287,997,000 pounds for the second quarter of 1940. The total for the first 6 months of 1941 is 766,089,000 pounds, over 200 million pounds above the total for the first 6 months of 1940.

Soybean oil consumption was 248 million pounds for the quarter ending June 30, 1941, compared with 204 million pounds for the quarter ending June 30, 1940.

Cottonseed oil consumption also rose precipitately, from 534 million pounds in the quarter ending June 30, 1940 to 728 million pounds in the quarter ending June 30, 1941. Consumption figures on practically all oils show fairly substantial gains for the same period. Because of the increased consumption, total stocks of all animal and vegetable fats and oils on

★ TENTATIVE ANNUAL

(Subject to additions and revisions)

THURSDAY, SEPT. 11

8:00 p.m. Informal Pre-Convention Smoker, Fort Des Moines.

FRIDAY, SEPT. 12

8:00 a.m. Registration, Lobby, Hotel Fort

9:00 a.m. Registration, Agricultural Hall, Iowa College, Ames, Ia. (Delegates can enter at either Des Moines or Ames.)

9:30 a.m. Convention convenes in Agricultural Ames, Ia. "Rates and Methods of Selling Soybeans," C. F. Arney, University of Minnesota.

10:00 a.m. "Soybeans as an Iowa Cash Crop," prominent soybean grower.

10:30 a.m. Discussion: "Soybean Meal and Live Feeding."

10:45 a.m. "The Why of Soybean Inoculation," W. A. Albrecht, University of Missouri.

11:10 a.m. "The New Soybean Grades," W. Flumerfelt, Waterloo, Iowa.

11:40 a.m. "Recent Developments in Small Soybean Processing Plants."

12:15 p.m. Luncheon, Memorial Union, Ames (Presentation of distinguished guests).

1:15 p.m. Field trip to Soybean Plots at Iowa Agricultural Experiment Station, Ames, Ia. Farm, conducted by Dr. M. G. W.

June 30, 1941, were 10 percent below stocks for the corresponding day of 1940.

This represents a drop of a quarter of a million pounds, from 2,596,497,000 pounds on June 30, 1940 to 2,344,279,000 pounds on June 30, 1941.

A record soybean production of 109 million bushels is forecast for this year. Cotton acreage, down 5 percent from 1940, however, is at the lowest point in 45 years, while the flaxseed outlook is for a 4 percent decrease. Government forecasters foresee a possible expansion in peanut oil production.

As for the soybean picture 77 mills crushed 476,197 tons during the quarter ending June 30, 1941, 24 percent above the 383,466 tons crushed for the quarter ending June 30, 1940.

Stocks on hand at the mills as of June 30, 1941 included 254,428 tons of soybeans and 19,420,000 pounds of soybean oil, as compared with 231,635 tons of soybeans and 14,305,000 pounds of soybean oil on June 30, 1940.

—sbd—

Warns Against Speculation

Accumulated stocks of vegetable oils—mostly unprocessed—piling up in the warehouses of the Philippines and South America, are tangible warning that any spiraling of vegetable oil prices should be based on the actual supply situation, and not on speculation, said Charles E. Lang, fats and oils specialist, U. S. Department of Commerce, in an address given before the American Oil Chemists Society at New Orleans, La., May 15.

Some of these oils, copra for example, can be stored up to 5 years without deteriorating appreciably. The shipping dislocation wrought by the war is the

Two Full Days Await Growers and Industrialists at Annual Convention

Commercial exhibits will be featured at this year's annual convention for the first time in the history of the American Soybean Association. These exhibits, which will enable firms of the soybean and related industries to display their products before the rest of the industry, will be arranged in booths built around a central educational exhibit in the lobby of the Fort Des Moines hotel.

A number of reservations already are on file with George M. Strayer, Hudson, Iowa, executive secretary of the Association. Additional reservations will be accepted up to Sept. 5, according to Strayer. A charge of \$35 is made for use of the exhibit booth, the income from the booths being used to help defray expenses of the convention.

TWO very full days—one emphasizing the grower's problems, and the other concentrating on the technical side of the industry, await delegates to the twenty-first annual convention of the American Soybean Association, to be held in Des Moines, Ia., Friday and Saturday, Sept. 12 and 13. Convention headquarters are in the Hotel Fort Des Moines.

A pre-convention informal smoker on Thursday evening will start the ball rolling. Registration will open at 8 a.m. Friday in the hotel lobby, and then delegates will drive to Iowa State College at Ames, 30 miles north of Des Moines, where most of the first day's program will be held. Transportation will be arranged for members arriving in Des Moines by train.

Growers' Problems Stressed

Registration will be continued in Agricultural Hall at Ames for delegates who have not registered at Des Moines, and the convention will be called to order officially in Agricultural Hall at 9:30 a.m., for a series of talks covering vital present day producer problems.

Delegates will spend the afternoon at the soybean plots of the Iowa Agricultural Experiment Station, where for the first time results of hybridization experiments under the direction of the U. S. Regional Soybean Industrial Products Laboratory will be made available to the industry. These plots are a part of the soybean breeding work being conducted by the Bureau of Plant Industry.

Machinery Exhibit

Also to be fully explained are experiments on the rate and time of seeding, and an extensive display of varietal observation plots, which will answer questions in the minds of producers. Delegates also will examine the latest soybean production and harvesting machinery.

In the evening, the scene of action moves back to Hotel Fort Des Moines, and the annual American Soybean Association banquet. A nationally known speaker and special entertainment will highlight the program.

Saturday's sessions, all in Des Moines, will be devoted to the technical problems of the industry, with experienced speakers describing interesting problems involved in research and manufacturing.

cause a smaller number of splits and small beans to fall through the sieve into the dockage material.

The maximum percentage of moisture also has been decreased from 15 to 13 percent in grade No. 1, from 15 to 14 percent in grade No. 2, and from 16.5 percent to 16 percent in grade No. 3. Grade No. 4 remains at 18 percent. The percent of damaged kernels allowable in No. 1 grade has been increased from 1.5 to 3.

cause of the stagnation of these overseas supplies, but war's end, with shipping losses quite possibly recouped by the tremendous shipbuilding program just getting underway, may find these supplies reaching the market rather rapidly, Lang warned.

If and when the war ends, there probably will be a great demand for oils of all kinds in Europe. However, much of the European processing capacity has been ravaged by the war, and the initial post-war demand probably will be chiefly for processed oil, he noted.

—sbd—

Digest to Supply Grading Sieves

TO aid the soybean industry in adjusting itself to the new grade changes, the *Soybean Digest* has made arrangements to supply a number of the new 8/64 inch sieves which will be in use to determine grade throughout the United States after Sept. 1.

These will be available in a money-saving offer which includes a year's subscription to *The Soybean Digest*, official publication of the industry.

Here is the offer:

2 sieves

1 pan

1 year subscription to the *Digest*

\$5.75 Total Cost

Regular value, \$7.25

The grade changes, adopted by the Agricultural Marketing Service after a series of conferences in May, were designed to bring about an effective No. 1 grade. Under the old system, only about 2 percent of all soybeans have been grading No. 1, with 35 percent grading No. 2 and 45 percent grade 3.

Under the new system, the number of splits allowed in No. 1 will be increased from 1 to 10 percent. Substitution of the 8/64 inch sieve for the 10/64 inch will

CONVENTION PROGRAM

resident collaborator, Bureau of Plant Industry, U. S. D. A.

9 p.m. Soybean Machinery Exhibit, Agronomy Farm, Ames, Ia.

10 p.m. Annual Banquet of American Soybean Association, Hotel Fort Des Moines, Des Moines, Ia.

SATURDAY, SEPT. 13

8 a.m. Session called to order in Hotel Fort Des Moines. "Five Years' Work at the Regional Laboratory," Dr. T. H. Hopper, acting director, U. S. Regional Soybean Industrial Products Laboratory.

"Ten Years of Operating a Small Soybean Processing Plant," Harry Schultz, Centerville, Ia.

"Farm Machinery and Soybean Production," Farm Equipment Institute.

"New Developments in Soybean Plastics," D. S. Ranseyer, Ford Motor Co., Dearborn, Mich.

"Current Usage of Soybean Oil Meal," Nelson Noble, Swift & Co., Champagne, Ill.

"Soybean Oil in 1940-41," Lamar Kishlar, Ralston-Purina Co., St. Louis, Mo.

"Soybeans and Interstate Trade Barriers," Geo. C. Payne, Department of Commerce, Luncheon.

1 p.m. Business session, election of officers, etc., ending at 4 p.m.

THE *Soybean Digest*



Published by the American Soybean Association, Hudson, Iowa, as a service to its members. Forms close on 10th of month. Subscription price, to association members, \$1.00 per year; to non-members, \$1.50 per year. Advertising rates on application.

GEO. M. STRAYER, Editor

ROBERT BLISS, Managing Editor

VOL. I • NO. 10

ELSEWHERE in this issue appears as complete a program for the annual convention of the American Soybean Association as we were able to give at press time. It is not final, we hope there will be several added features not yet confirmed, about which we naturally could not tell you. But we believe there will be things of vital interest to all in the soybean industry — grower, processor, grain dealer and manufacturer. And of course, those intangible values that make a convention more than just a series of addresses — rubbing elbows with old friends, making new ones, the stimulation and fresh enthusiasm that comes from seeing and hearing what the other fellow has been doing. It looks like a big year ahead for the soybean industry. Let's prepare for it by attending the annual convention, Sept. 12 and 13, at Hotel Fort Des Moines, Des Moines, Iowa.

THIS MONTH we greet a newcomer to the staff of *The Soybean Digest*. He is Robert Bliss of Ames, Iowa, who takes the place of John Townsend as managing editor. Mr. Townsend has returned to his home at Celina, Ohio, to await appointment as flying cadet in the photography division of the U. S. army air corps. Mr. Bliss received his bachelor of science degree from Iowa State College in June, 1940, and during the past year has taken graduate work there and also served as associate editor of *The Cooperative Consumer*, published at North Kansas City, Mo. During his senior year at Iowa State, Mr. Bliss was editor of the student newspaper, *The Iowa State Student*.

To John Townsend, who in six months has become an integral part of the soybean industry, we convey our best wishes for success in his venture into the photography division of the Army Air Corps. We are sorry he can not stay with us — but the army beckons.

ON SEPTEMBER 1 the new grading standards go into effect. They contain stipulations much different than the former grading rules. They make it imperative, if you deal in soybeans, that you become familiar with the grading factors, especially moisture, dockage and foreign material. They will be more important to you than ever before. Their determination will require different equipment, and different handling. We can not make it too emphatic that it will be much

cheaper for you to become familiar with the new standards before you get caught on excessive dockage or too high moisture content. The new standards were discussed at length in the June issue of *The Soybean Digest*. Grain dealers will find it advantageous to have their staff members familiarize themselves. Growers likewise.

ON AUGUST 9 the Federal Government purchased three million pounds of soy flour, presumably for export under Lease-Lend provisions. The world is becoming aware of the value of soybeans in the human diet. The German army uses large quantities. Our armed forces are experimenting with food concentrates containing soy flour.

On the American Soybean Association annual convention in Des Moines and Ames, Iowa on September 12 and 13 there will be discussion of the uses of beans as human food. In the nation's soybean crop there is a vast reservoir of human food which has barely been tapped, and which is among nature's most nutritious and healthful. We predict that in the next five years we will see almost unbelievable developments in the field of human consumption of our farm product. We as producers do not yet fully appreciate our own crop.

WE CAN'T stress too much that *The Soybean Digest* is your publication, the official publication of the American Soybean Association. Its purpose is to serve you. If you have a suggestion of a department you'd like to see in *The Digest*, or some special article on which you'd like some information, or some matter you think should have the attention of the Association, why not write us a letter and tell us about it?

Likewise, you can help the Association in many ways, especially in legislative matters. When the legislative committee presents a brief or recommendation to a congressional committee, it speaks for the whole Association, of course. But each individual in the Association can add immeasurably to its influence by writing to his own congressman. By so doing he impresses upon his legislator the fact that the whole Association is really back of its committee. Incidentally, several letters from *individuals* probably counts quite as much as one letter from a group, even though that group represents several thousand individuals.

THE AMERICAN SOYBEAN ASSOCIATION

President.....G. G. McIlroy, Irwin, Ohio
Secretary-Treasurer.....J. B. Edmondson, Clayton, Indiana

Vice President.....David G. Wing, Mechanicsburg, Ohio
Executive Secretary.....Geo. M. Strayer, Hudson, Iowa

You Get Both { **Low Price**
Long Experience

in This Better-Built Combine for

SOY BEANS



If you have BOTH soybeans and small grains, this Case Model F combine is the type to fit your farm because it is built from the beginning for BOTH. It takes a 54-inch swath. What's more important, it has capacity to take care of what it cuts...capacity to thresh, separate, and clean the seed...even in heavy, tough, tangled crops. The "F" gives you capacity where it counts...and gives it to you at a low price.

To do BOTH calls for special skill and experience. Case has been building grain-saving machines for 99 years. Whether you choose the "F", the six-foot "A-Six", or one of the 8, 10, or 12-foot Case combines, you get the benefit of the longest and broadest world-wide experience in saving every sort of threshable crop. In any size you get a cylinder properly proportioned for first-class work BOTH from the windrow and in standing crops. See your Case dealer about them.

You Get More for the Money in Any Case Machine

In Case bean-and-beet planters, narrow-row cultivators, and Seedmeter drills you will find features of extra value for soybean culture, yet they cost no more. Case Centennial plows and Power-Control disk harrows prepare better seedbeds with less time and bother. Ten new models of Flambeau Red Case tractors offer fast, low-cost power for every type and size of farm. Write for free folder on any machines that may interest you. J. I. Case Co., Racine, Wis.

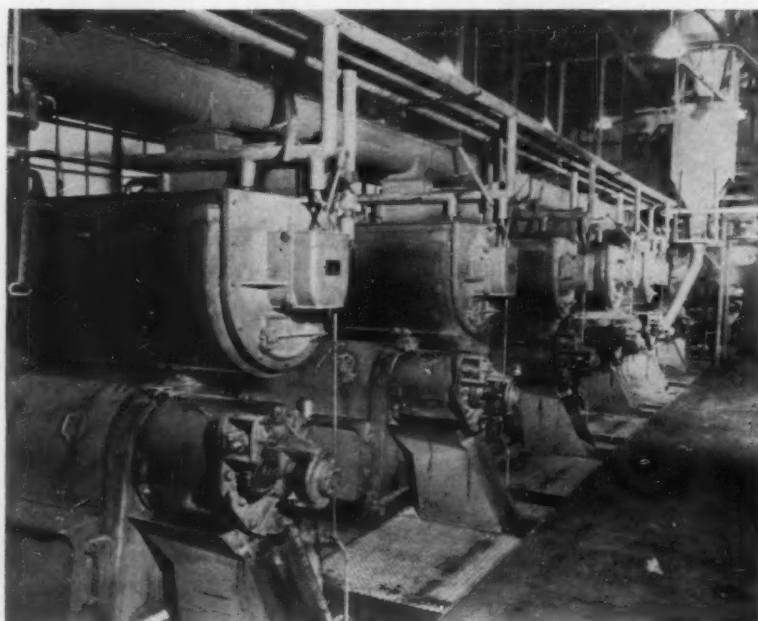
CASE

**SEE THEM AT YOUR NEAREST
CASE DEALER**

INCREASE YOUR FARM PROFITS

» Feed SOYBEAN OILMEAL by preference, thus making a better market for your cash soybeans. We now guarantee 43% PROTEIN in our CEDAR VALLEY BRAND Old Process Soybean Oilmeal. Try it — our prices are always in line. We give good service on both carlots and trucklots.

SOY BEAN PROCESSING COMPANY
WATERLOO, IOWA



PROFITS are made in the PRESS ROOM

Wide awake processors today realize more than ever before how much their financial showing at the end of the year depends on a small per unit figure for oil extraction costs. The narrow spread between the prices of soybean products and soybeans have made it so.

That's why the largest soybean mill erected in 1940 specified French screw presses. That's why the majority of the new soybean plants built last year specified French equipment. They knew from

their own experience the fine performance obtainable with French screw presses.

Rigid, sturdy, simple design, high capacity, give less trouble, less shutdown time and greater annual production per press. And the exclusive French water cooled cage lightens oil color, minimizes foots. Be it soybeans or any other oil

or fat bearing material, you will find the French Screw Press the finest machine for your extraction requirements.

French

SCREW PRESSES

THE FRENCH OIL MILL MACHINERY CO.

PIQUA, OHIO

SOYBEANS

... and People

U. S. D. A. Bulletin No. 166 states that cooked green beans make a good scalloped dish when mixed with tomato or white sauce, covered with buttered bread crumbs, and baked in a moderate oven until the beans are heated through and the crumbs are brown.

Looking for warm weather food? The U. S. D. A. suggests you try cooked green beans in vegetable salad.

If you want to can beans you should cook a No. 2½ size can 80 minutes in a pressure cooker at 240 degrees F.

Regular cooked beans should be boiled in the pod 3 to 5 minutes, then shelled, and boiled in lightly salty water. Salt, pepper, bacon, pork, butter or margarine are recommended as seasoners.

Illinois Agricultural Experiment Station Bulletin No. 453 points out that care should be taken to avoid overcooking the beans. They should be boiled for 10 minutes in a covered container. There should be one cup of boiling water and ¾ teaspoon of salt to each pint of beans. When the cooking is completed the beans should be a bright green color.

After the original scalding to soften the pod, the Illinois bulletin recommends breaking the pod in the middle to shell. A pound of the beans can be shelled in this manner in from 9 to 12 minutes.

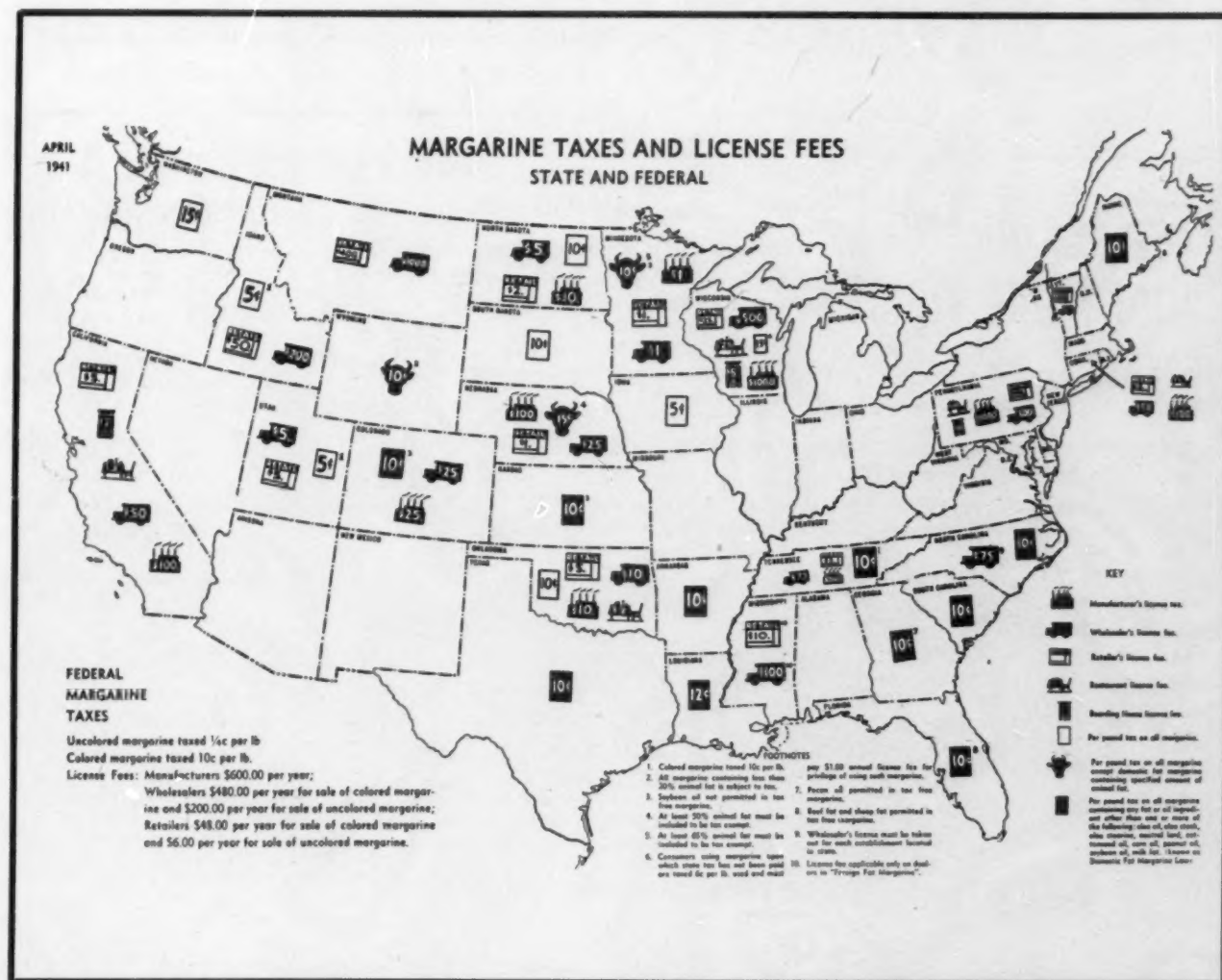
The Illinois station suggests that market gardeners and retail dealers print or mimeograph directions for cooking for distribution to purchasers of green soybeans.

—sbd—

The soybean industry is keenly interested in S. 1623, a bill introduced to the Ways and Means committee of the United States Senate by Senator Millard F. Tydings of Maryland. This bill would remove the excise tax on coconut oil imported from the Philippine Islands, resulting in a probable flood of half a billion pounds of the oil annually. This would take the market of about 3 million acres of soybeans, or twice that acreage of cotton seed.

*As soybeans will not grow in a bound soil
So consumption cannot grow in a bound market*

YOUR MARKET IS BOUND!



The amount of soybean oil consumed by the Margarine Industry reached its high peak in 1940 in a total of more than 87 million pounds from a beginning of 7000 pounds in 1933. Such a phenomenal growth cannot continue against the ceiling of the unwarranted legislative restrictions

against the manufacture and sale of this product, of which the above chart gives only a partial picture.

These unfair laws against a wholesome food product made from nutritious soybean oil bind your market. This market cannot continue to grow unless these restrictions are removed.

Millions of families need this product: You need the market outlet. Industry needs opportunity to serve you and the consumer public.

To insure an expanding market for soybean oil these restrictive trade barriers and unjust tax laws against oleomargarine ought to be repealed.

NATIONAL MARGARINE INSTITUTE

OLD COLONY BUILDING • CHICAGO, ILLINOIS

THE VERY BEST IN *Soy-Paints*



O'Brien chemists, headed by Matt F. Taggart, have perfected and patented new, super-successful treatments for raw soybean oil. O'Brien Soy-Paints not only contain more soybean oil per gallon (45%); they are actually superior in quality to the best linseed oil paints. If you are interested in purchase for use or for resale, write the O'Brien Varnish Company, South Bend, Indiana.

A Storage Bin That's Tailor-Made To Fit Your Needs

● Neff & Fry super-stave storage bins can be built in any size for any soybean or grain handling requirement . . . as small as 10' x 20' or as large as 30' x 70'. The same special N & F feature is used in every bin . . . the hi-strength, N & F diagonal locking stave that joins with six other staves and is securely bound in place by steel hoops. Often erected in three days or less. Surprisingly low cost.

Write for full details.



The Neff & Fry Company

CAMDEN, OHIO

More Soybean Oil Going Into Margarine

More than 92 million pounds of soybean oil found its way into the nation's oleomargarine production of 343,812,378 pounds for the fiscal year ending June 30, 1941, according to figures released by the U. S. Bureau of Internal Revenue.

The only other important source oil for margarine in this country, cottonseed oil, contributed 135 million pounds for the year.

By brief comparison, foreign oils were less than one-fifth the soybean oil used, and less than one-twentieth the total ingredients, which aggregated 354,920,694 pounds.

In addition to the oils, two important domestic products going into the manufacture of oleo were milk and salt, with 64,417,645 and 12,547,879 pounds respectively.

The total production of margarine for June, 1941 was 25,082,674 pounds, an increase of 5,212,635 pounds or 26 percent, over the 19,517,465 pounds margarine production in 1940. During the month 5,541,286 pounds of soybean oil were used in the production of plain and colored margarine, compared with 4,463,354 pounds in June, 1940.

—sd—

Soy Oil Use Grows

Although production of compounds and vegetable cooking fats was about 213 million pounds (15 percent smaller) in 1940 than in 1939, the quantity of soybean oil used in manufacture was nearly 11 million pounds larger, the Fats and Oils Situation for July states.

In 1940, soybean oil accounted for about 18 percent of the total fats and oils used compared with 14 percent a year earlier, and less than 1 percent in years prior to 1935.

While soybean oil was gaining, cottonseed oil dropped 82 million pounds; palm oil dropped 80 million pounds; peanut oil fell off 29 million pounds; and edible tallow and stearine lost 26 million pounds. In percentage of total oil used, cottonseed oil showed a gain of 5 percent, from 64 percent in 1939 to 69 percent in 1940.

Soybean Production Increased 57.5%



with ROCK PHOSPHATE

Sam Ackerman of Tazewell Co., Illinois (shown above in the midst of his Soybean crop) made this test with 1000 pounds of Rock Phosphate per acre. After applying the phosphate to one section, the entire field was drilled to soybeans. Production on the phosphated portion of the field was 57.5% more (weight of the whole plant) than on the part not phosphated. That's not all! There were 62% more soybeans in the pods of the plants from the phosphated land! This is typical of the results obtained from applying . . .

RUHM'S PHOSPHATE

This high-grade, finely ground, natural rock phosphate offers the most effective means of supplying the phosphorous which soybeans must have, to replace the great quantities of this vital element removed from the soil with each crop. It is the cheapest and the longest-lasting source of phosphorous. If you want to get bigger, better quality, earlier-maturing soybean crops write for full details and prices.

"FARMER" RUSK

Bloomington, Illinois

or

RUHM PHOSPHATE & CHEMICAL CO.

Mt. Pleasant, Tennessee

When you come to the Convention
**Stay at Convention
 Headquarters!**



**HOTEL
 FORT DES MOINES**
 DES MOINES

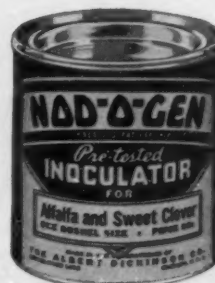
Enjoy your trip to the fullest by staying here, where all your friends will be—close to all sessions, committee meetings, exhibits and other activities. Hotel Fort Des Moines is Iowa's largest hotel. Just the accommodations you want. Write for your reservation now.

★ DES MOINES' BEST FOOD IN THE
 FORT COFFEE SHOP and THE OAK ROOM

Quick service! Popular prices!

A PIONEER INOCULATOR

● To encourage the practice of inoculation, the entire output of the NOD-O-GEN laboratory was given away with legume seeds for ten years. This plan proved to growers that inoculation was highly profitable, and that NOD-O-GEN was a good inoculator.



Since then the practice of inoculation has continued to expand extensively and NOD-O-GEN has been constantly improved in the light of consistent research.

Inoculator Division

THE ALBERT DICKINSON COMPANY

Chicago, Ill.

Est. 1854

NOD-O-GEN
 The Pre-tested Inoculator

NEW PURINA PLANTS to Serve Western Farmers

IOWA FALLS, IOWA—Construction is progressing on schedule on Ralston Purina's new plant at Iowa Falls. Storage elevators will be complete to take new crop soybeans in October. The soybean unit and feed mixing sections will probably not start before December.

OMAHA, NEBRASKA—A feed mixing plant will start operating this month.

These two new plants will serve thousands of feeders and soybean growers that could not be cared for in the past.

"Buy the feeds that use the soybeans you grow"

RALSTON PURINA CO., St. Louis, Mo.





**"I WANT MORE EGGS, POULTRY,
PORK AND DAIRY PRODUCTS FOR
NATIONAL DEFENSE"**

Through the U.S.D.A. Uncle Sam is asking for increased production to help win the "Battle of Food".

WAYNE REPLIES: "Animals and birds fed Wayne "I-Q" Feeds have an opportunity to produce in line with the breeding back of them. Laying hens have produced 50% more eggs on the "I-Q" Program. Broilers showed a 25% greater growth when given "I-Q" feed as compared to those on the same formula made from untested ingredients. Turkeys have produced 25% more meat in the same time when given the advantages of "I-Q". Hogs on tested ingredients have in the same time produced an average of 50 lbs. more per hog when given tested versus untested ingredients. Help yourself and Uncle Sam — *FEED WAYNE.*"

Four Soybean Processing Plants

Allied Mills was a pioneer in soybean processing and led the way in soybean research and popularizing the use of Soybean Meal for livestock and poultry feeding.

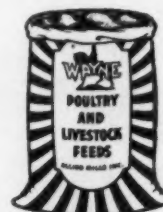
Our four big processing plants are located at:

Peoria, Illinois; Omaha, Nebraska; Portsmouth, Virginia and Taylorville, Illinois



FOR YOUR OWN PROTECTION

—use WAYNE FEEDS that have the I. Q. Seal of Quality stamped on the Bag. When you use WAYNE you help make a better market for your soybeans.



ALLIED MILLS, Inc.

EXECUTIVE OFFICES: Chicago, Ill. SERVICE DEPARTMENT: Ft. Wayne, Ind. FEED MILLS: Peoria, Ill.; Fort Wayne, Ind.; East St. Louis, Ill.; Omaha, Neb.; Buffalo, N. Y.; Portsmouth, Va.; Memphis, Tenn.



Sees Wider Use of Soy Flour

A late news release by the U. S. D. A. stated that 3 million pounds of soy flour had been purchased during the first week of August.

P. E. Sprague, president of the Soy Flour Association, reports that probably over a million and a half pounds of soy flour is being supplied to England during August, in accordance with recommendations made to the British Ministry of Foods by various members of the Association. In addition, more than a million pounds of soy grits have gone into government dry soup recipes in the past 60 days, Mr. Sprague reports. This also is being shipped abroad.

"It is only a question of time until there will be a large usage of soy flour and of grits in this country compared to the present business which is relatively small," says Mr. Sprague. "The fine evidence of recognition of the high merit and quality of soy flour is the result of a great deal of effort, time and work and can only accompany products made in modern up-to-date plants by carefully controlled processes."

—abd—

Soybean Protein Can Replace Casein

A demand for as much as 20 million pounds of soybean protein annually is foreseen by leading soybean chemists as a result of shortages in casein supplies resulting from the national defense program, according to U. S. D. A. officials.

Only one company is producing a commercially significant amount of refined soybean protein, and its production capacity is only about 6 million pounds annually. Two other companies have plans for building factories under serious consideration, one of which already has built a pilot plant to serve as a guide for greater production.

U. S. D. A. chemists state that the adhesive qualities of the soybean protein are fully equivalent to casein. The chemists began working on the problem of extracting the protein from soybeans in a commercially practicable fashion more than 4 years ago in the Regional Soybean Industrial Products Laboratory at Urbana, Ill. At that time defense needs were not in the picture, but because of this pioneer research work the soybean protein is now available to help offset the present threat to defense production caused by restricted casein supplies, ever becoming more limited because of increased demand for milk in edible form. For this reason the Office of Agricultural Defense Relations has made arrangements for the Soybean Laboratory to study the possibilities of increased production of soybean protein.

Soybean protein can be substituted for casein as an adhesive with only small differences in the final results. The paper coating industry consumes about three-

fourths of annual casein production of 72 million pounds, and large quantities are also used in the manufacture of plywoods, plastics, water paints, paper sizing, leather finishes and insecticide sprays. Soybean protein is considered an equivalent to casein in all of these uses, although in the case of paper coating its use results in a darker color, and possesses some properties superior to those of casein. Under present methods of commercial production, soybean protein cost holds fairly steady at near 12 cents per pound, whereas milk casein fluctuates over a price range from 7 to 30 cents per pound. Department of Agriculture officials believe that further developments in processing methods might allow a reduction in price of several cents a pound for soybean protein.

Organic salts in the soybean meal make the protein easily available through a process of water and alkaline dispersion and subsequent precipitation. A pure, almost white protein is obtained by this process. Under optimum conditions a yield of 90 percent protein from the meal can be achieved. On a basis of a demand for 20 million pounds of protein, over a million and a quarter bushels of soybeans would be required. A solvent-extracted meal is necessary, since heating "denatures" the protein.

In addition to the valuable protein extracted by this method, the residue known as prosoy G may be used in the manufacture of plastics. When used to extend phenolic plastics, it produces a product of lighter weight and greater impact strength.

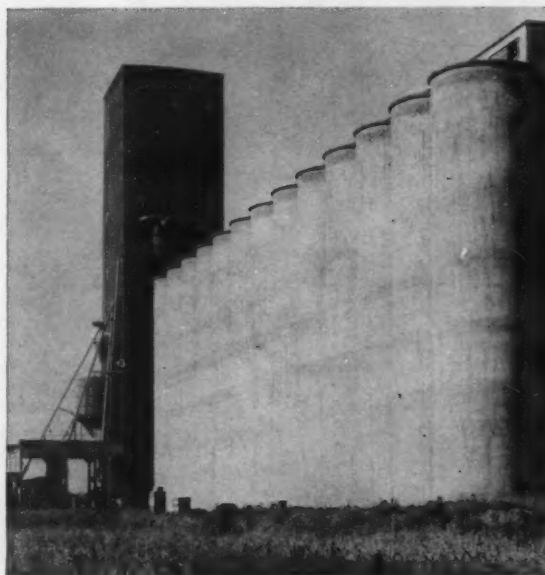
Spencer Kellogg AND SONS, INC.

W E L C O M E

the members of the

American Soybean Association

to Des Moines, Iowa
FOR THE ANNUAL CONVENTION
September 12 and 13, 1941



Spencer Kellogg Elevators . . . Des Moines Plant

"Keep Ahead With Kellogg"

... prepare

FOR THE NEW SOYBEAN
GRADING STANDARDS
EFFECTIVE

September 1

WITH A

NEW SIEVE SET

Take Advantage of This
Offer . . .

- 1 8/64" ROUND HOLE SIEVE
- 1 10/64"x3/4" SLOTTED SIEVE
- 1 CATCH PAN
- 1 YEAR SUBSCRIPTION TO—

THE DIGEST
all for \$5.75

(Regular Value, \$7.25)

Sieves meet Federal
grading specifications

YOU'LL FIND THE DIGEST TO
BE A REAL CLEARING HOUSE
OF INFORMATION ON THE SOY-
BEAN INDUSTRY.

Mail your order today to
THE

Soybean Digest
Hudson, Iowa

Hogs Can't Perform Miracles

By K. J. MALTAS
Member, Soybean Nutritional
Research Council

If someone gave you some lumber, and a hammer, and a saw—but no nails—and told you to build a house you would have a difficult time. It could be done of course, but it would be a slow process—and expensive.

The hog is a remarkably efficient meat producing animal. Many hog men who would readily agree that building a house without nails would be foolhardy and expensive, however, do expect this lowly animal to do the more difficult task of producing pork without proper materials. The result is slow, expensive production.

Hogs require six nutrients in rather definite proportions in order to produce pork economically. This is because each nutrient performs a somewhat different job in the animal's body. These six nutrients are protein, carbohydrates, fats, minerals, vitamins, and water.

Protein is the nutrient most commonly lacking. Farm grains and grasses supply most of the other nutrients in abundance. In pork production, protein supplements represent the nails which will enable the hog to economically and efficiently convert the "lumber"—namely, the farm grains into quality pork.

The cost and the amount of nails to build a house is very small comparatively. Likewise the amount and cost of a protein concentrate to supplement grains is comparatively small.

As an example the University of Illinois has shown that 5½ to 6 bushels of corn and 50 pounds of soybean oilmeal will produce 100 pounds of pork. Compare this with straight corn feeding which generally requires 10 to 12 bushels to produce 100 pounds of pork. The cost of the corn-soybean oilmeal ration required to produce 100 pounds of pork is much less than the cost of the straight corn required to produce 100 pounds of grain. The rate of gain is also much faster on the corn-soybean oilmeal ration.

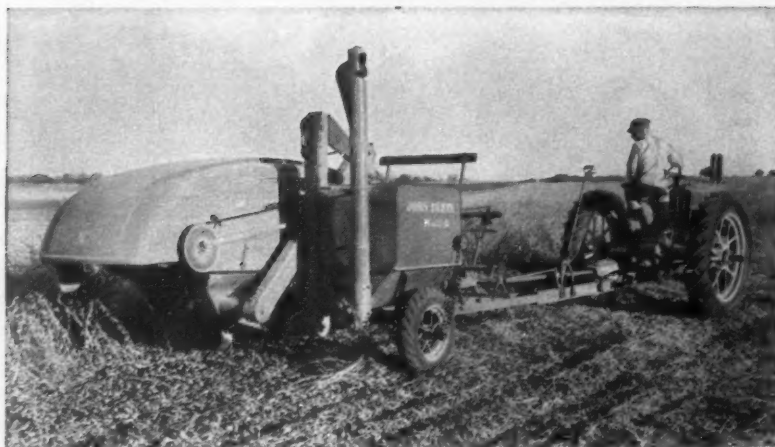
The difference between cost of production and selling price is profit. You can't influence selling price because several million farmers set it. The cost of production however is entirely in your hands. A sure way to cut costs is to supplement your farm grains with a protein supplement such as soybean oilmeal. Don't expect your hogs to perform miracles. They can't.

—sbd—

~ Flour made from soybeans processed by the solvent method runs as high as 54 percent protein of a quality comparable with meat and milk protein.

Savings add up in a hurry

When you harvest Soy Beans with a



● Write today to John Deere, Moline, Illinois, for free folders on these remarkable, time-, work- and money-saving combines.

JOHN DEERE COMBINE

● Savings in soy beans and in harvest costs soon add up into important money with a John Deere Straight-Through Family-Sized Combine on the job. You can be sure of more bushels of higher grading beans in the bins—at a lower per-bushel harvesting cost.

Crop savings in John Deere Combines start at the cutter bar and follow straight through the machine. John Deere Combines practically shave the ground to save the low-growing pods. Their gentle handling of the crop from cutter bar to cylinder . . . their clean threshing with a minimum of cracking . . . their thorough separation and careful cleaning, together with exceptionally low operating costs, insure bigger soy bean growing profits.

JOHN DEERE • MOLINE, ILLINOIS



**Central
41%
Soybean
Oil Meal**

(Expeller)



**Central
Star
Brand
44%
Soybean
Oil Meal**

(Browned
Extracted)



*We provide
a year-round
market for
your
soybeans.*

CENTRAL SOYA COMPANY, Incorporated
MILLS: DECATUR, IND., AND GIBSON CITY, ILL. GENERAL OFFICES: FORT WAYNE, INDIANA

FEED LITERATURE

► **The kind that moves tonnage because it talks
authoritatively . . . in the feeders' own language**

Our organization specializes in printed advertising for the agricultural field. We have been serving hatcheries, feed mills, implement and equipment manufacturers, and other agricultural advertisers for over 19 years. Our service is complete — from originating the ideas to delivering expertly printed or lithographed copies of mailing cards, folders, booklets, catalogs, displays, etc. We are in close touch with marketing factors and feed research so that our selling ideas will be sound. We have a unique file of advertising photographs (which we are adding to almost daily) and we are pioneers in bringing "Vitachrome," our full, natural color reproduction to this field. Because the sales literature we prepare gets consistently good results we have attracted customers as far distant from our home state as New Hampshire, Pennsylvania, Texas, and many intermediate states. . . . Isn't there a good possibility that such a service would be valuable to you? We'd like to tell you about it in detail and send you samples of our work — all with no obligation whatever. Just drop us a card.

STEWART-SIMMONS COMPANY
WATERLOO, IOWA

PLANNING . . WRITING . . ILLUSTRATING . . AND PRINTING OF AGRICULTURAL ADVERTISING LITERATURE

More Oil from
SOYBEANS
with
SKELLYSOLVE



**We've Had an Eye on Him
for Some Time!**

**SKELLYSOLVE
for the SOYBEAN
Industry**

There are six different types of Skellysolve which are especially adapted to the efficient extraction of corn germ, soybean, cottonseed, meat scrap, and other vegetable and animal oils. The Skellysolve that is especially refined for extraction of more oil from each bushel of soybeans has the correct boiling range and other special properties which meet the exacting requirements of this particular service.

YES—Skelly Oil Company chemists anticipated the growing interest in solvent processing of soybeans some time ago.

And we didn't merely anticipate meditatively—we *did something about it.*

That's exactly why Skelly Oil Company is now in a position to offer you adequate and dependable supply of the type of SKELLYSOLVE especially adapted to efficient and economical extraction of soybean oil.

Processing with SKELLYSOLVE enables you to get more pounds of oil from each bushel of soybeans—and to tailor-make your meal to any desired use, feeding or industrial.



Write for details of SKELLYSOLVE and *Skellysolve Service*. Both have won an enviable reputation—and they did it by “delivering the goods.” Your inquiry entails no obligation.

SKELLYSOLVE

SOLVENTS DIVISION, SKELLY OIL CO.
SKELLY BLDG., KANSAS CITY, MO.